

(19)



JAPANESE PATENT OFFICE

# PATENT ABSTRACTS OF JAPAN

(11) Publication number: 09205728 A

(43) Date of publication of application: 05.08.1997

(51) Int. Cl. H02H 9/04

H02H 7/20, H02H 9/06, H03K 17/78

(21) Application number: 08010901

(22) Date of filing: 25.01.1996

(71) Applicant: NEC CORP

(72) Inventor: OGAMI CHOJI

## (54) ABNORMAL VOLTAGE PROTECTING CIRCUIT

### (57) Abstract:

**PROBLEM TO BE SOLVED:** To perfectly protect an internal electronic circuits immediately after generation of abnormal voltage by providing a photocoupler which operates at a high speed and a transistor which also operates at a high speed and also disposing a resistor between an input/output terminal of electronic device and an internal electronic circuit.

**SOLUTION:** A positive abnormal voltage to be applied to an input/output terminal 1 is input to an input terminal of a photocoupler 3 via a resistor 5, an output transistor of the photocoupler 3 turns on and a high speed NPN transistor 4 also turns on subsequently. The high speed NPN transistor 4 turns on until an ar-

rester 2 starts discharging to perfectly shield the influence of irregular voltage. Thereafter, the arrester 2 starts discharging to protect internal electronic circuit 9. Since irregular voltage may be controlled immediately after generation of irregular voltage only by using high speed photocoupler 3 and transistor 4, this invention is effective for protection of the internal electric circuit 9.

COPYRIGHT: (C)1997,JPO

